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Our comparison of the theoretical (Hartree-Fock-Slater) and experimental level structures of the p^5f and p^5g configurations of the rare gases is nearly complete and will be finished during the next report period. This is with Dr. C. J. Humphreys, Naval Ordnance Laboratory at Corona, California, and Dr. R. D. Cowan, Los Alamos, New Mexico. Similarly the Sn I and Sn II work is nearing completion.

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The VUV portion of this is again with Kaufman at NBS and the IR with Humphreys at NOLC. Dr. Brill in our laboratory has carried out the interferometric and grating uv, visible and photographic infrared determinations.

Some interesting Zeeman patterns in Ge I and Ge II have been obtained with Dr. A. Giacchetti at Argonne National Laboratory and interpreted with Cowan at Los Alamos last summer. The strong field mixing of wave functions was able to give an almost complete quantitative account of the perturbed intensities and positions of the Zeeman components of the transition $4d^2 D_{5/2} - 4f^2 F_{5/2}, ^2F_{7/2}$ in Ge II. This work was reported at the Zeeman Centennial Congress in Amsterdam this past September.

Progress continues on the spectra of Pb I, Cu II and As II with Messrs. Wood, Ross, and Li respectively. Recent Zeeman spectrograms of Pb I taken by Mr. Wood with Giacchetti at ANL have proved helpful in securing the identification of additional terms of the lead spectrum. Humphreys is making scans of Pb I in the lead sulphide region for us. He is using electrodeless discharge tubes containing the lead isotope 208 in the form of lead chloride and lead bromide and will later use lead iodide. These are tubes which Mr. Wood has made in our laboratory.

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